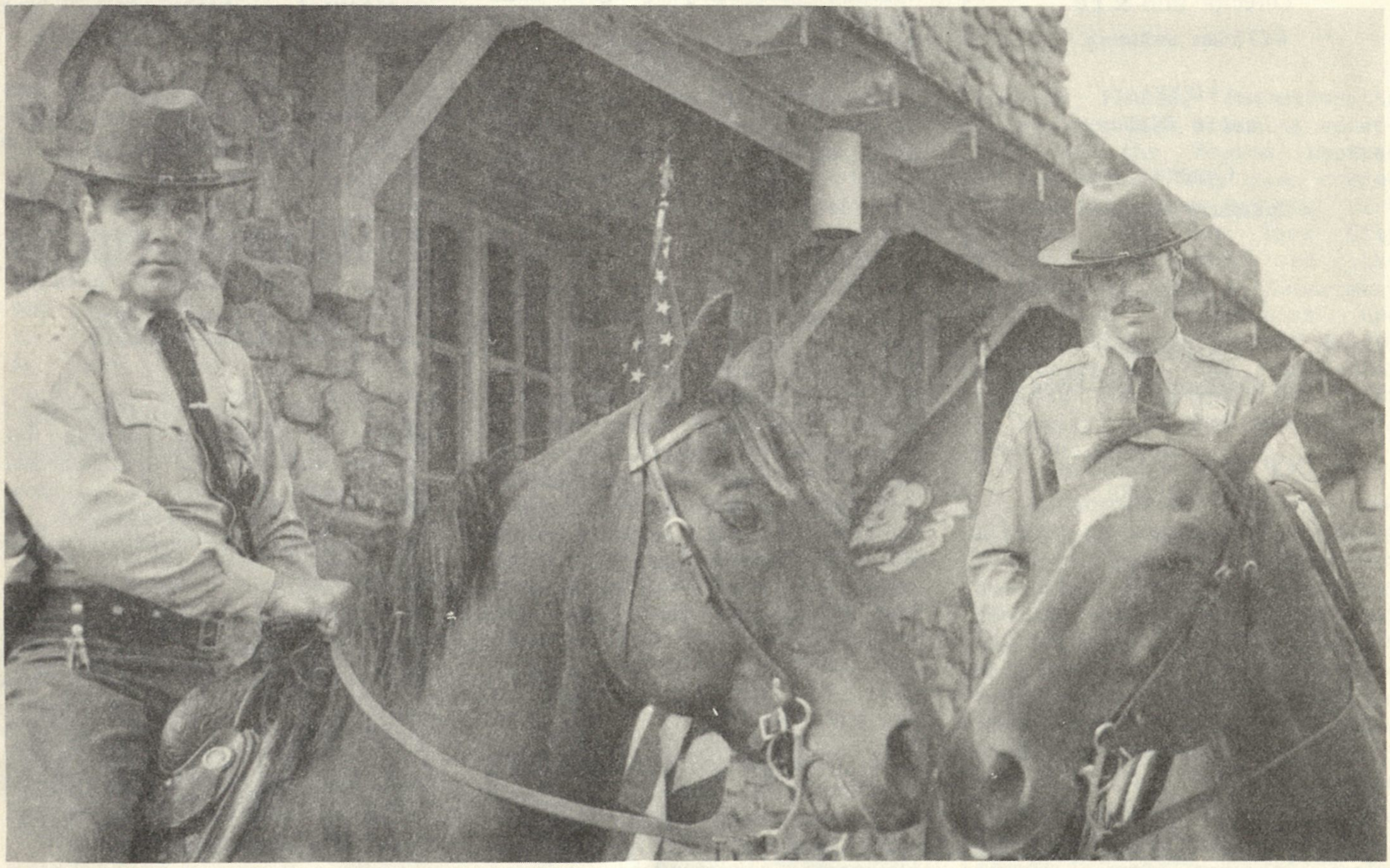
CT DOCS
En90
cb
.11no.5
Jan. 1984
Item (15-B)
10B

Citizens' Bulletin

Volume 11 Number 5 January 1984 $5/yr.
The Connecticut Department of Environmental Protection

CONN COLLEGE LIB.
FEB 20 '84
NEW LONDON, CT.

DEP is horsing around



Citizens' Bulletin
January 1984
Volume 11 Number 5 $5/yr.
Cover Photo: Rangers John Johnston (l) & Tim Skaats (r) patrol Rocky Neck State Park on horseback; Leslie Bieber

Contents

1 *Outdoors/Pesticides*
2 *Horse patrol*
6 *Hazardous wastes*
10 *Nature Notes*
13 *Stoves cause pollution*
16 *Nautilus to Groton*
18 *Tougher tests*
20 *Septic systems*
21 *Buyer beware*
22 *Undersea Research Center*
24 *Trailside Botanizing*

Commissioner
Stanley J. Pac

Director Info & Ed
William Delaney

Editor
Leslie Bieber

Graphics
Rosemary Gutbrod

Composition
Caryn Alleva

Circulation
Helen Moriarty 566-5524

DEP Citizens' Bulletin
(USPS 041-570)

Published eleven times a year by the Department of Environmental Protection. Yearly subscription $5.00; two years, $9.00. 2nd class postage paid at Hartford, Connecticut. Funds are also provided through a federal grant from the Office of Coastal Zone Management under the Coastal Zone Management Act of 1972. Please forward any address change immediately.

Material may be reprinted without permission provided credit is given, unless otherwise noted. Address communications to Ed., DEP Citizens' Bulletin, Dept. of Environmental Protection, Rm. 112, State Office Bldg., Hartford, CT 06106.

Discover the outdoors!

A Forest Discovery series and a monthly Last-Sunday program are only two of the highlights in a listing of events offered at the James L. Goodwin State Forest Conservation Center for 1984.

Other programs feature nature crafts, sugar-making, and fishing; Smokey Bear, wildflowers, and native landscaping; woodcrafts, waterfowl, and forest products; wild turkeys, snakes, and insects; birds and Christmas trees.

The forest discovery series is a twelve-part family program that will take place at 1 p.m. on the third Sunday of each month at the Conservation Center. The first program will be held January 15. For more information, contact Lois Kelley at the number listed below, or the Information and Education Unit of the Department of Environmental Protection, State Office Building, Hartford, CT 06106 (203) 566-3489.

The Last-Sunday program will begin on January 29 at 1 p.m. A skater's tour of Pine Acres Pond offers the opportunity to investigate aspects of marsh and pond from vantage points only available in the winter. Under the guidance of Dr. William Jahoda, biologist, participants will explore muskrat and beaver habitat, identify the plants of marshland and pond-edge, and learn how the winter affects this wildlife scene.

"The Connecticut Department of Environmental Protection is an equal opportunity agency that provides services, facilities and employment opportunities without regard to race, color, religion, age, sex, physical handicap, national origin, ancestry, marital status or political beliefs."

The skater's tour is the first of a series of programs co-sponsored at the Conservation Center by the Sierra Club on the last Sunday of each month during 1984. All are open to the public at no charge. For more information on this or any of the other activities mentioned above, write or call Lois Kelley, Conservation Center Director, Goodwin State Forest, North Windham, CT 06256, (203) 455-9534.

The James L. Goodwin Forest Conservation Center, one of the state's earliest Tree Farms, was given to the people of Connecticut as an educational resource. Programs are offered on a variety of conservation-related subjects of general family interest as well as on specific resource management techniques and practices.

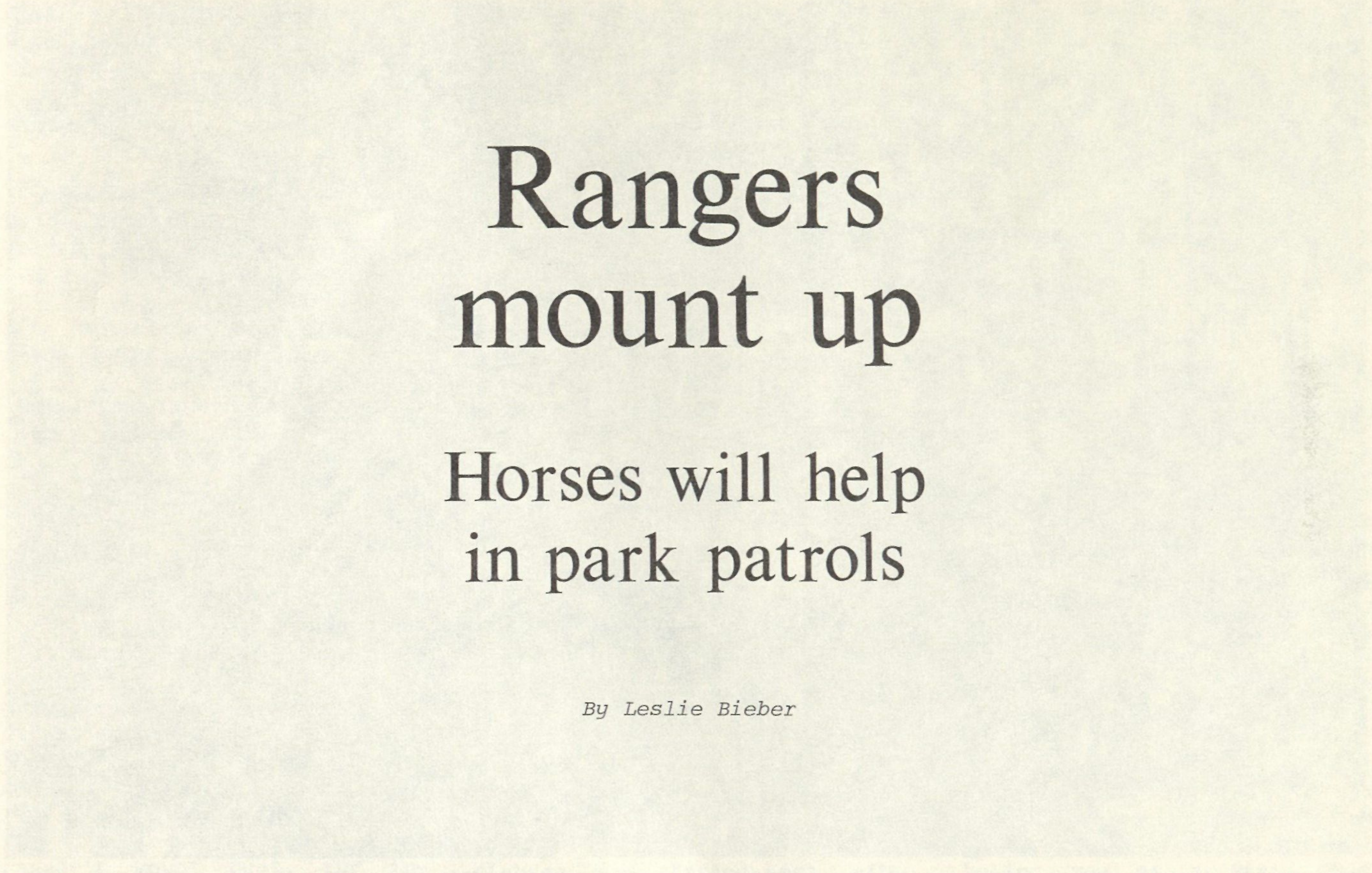
The Center is located just off Route 6 in Hampton, eight miles east of Willimantic. ■

Report on pesticides

A report on inspections of pesticide products carried out by The Connecticut Agricultural Experiment Station in cooperation with the Department of Environmental Protection is now available.

The report, Bulletin 814, lists the results of tests on 282 samples of pesticides made by 63 manufacturers. Thirty-two of a total of 430 claims for active ingredients were not met. The results of tests on fertilizers and animal feeds are also included.

Free copies are available from Publications, The Connecticut Agricultural Experiment Station, P.O. Box 1106, New Haven, CT 06504. ■



Rangers mount up

Horses will help in park patrols

By Leslie Bieber

The Department of Environmental Protection hired Ralph, Fred, and Sam last year to work at Rocky Neck and Hammonasset Beach State Parks. In return for their services in controlling crowds, patrolling parking lots and camping areas, and conducting searches, these three have been given a place to live, shoes, and all the food they can eat. They eat like horses, by the way; actually, they *are* horses.

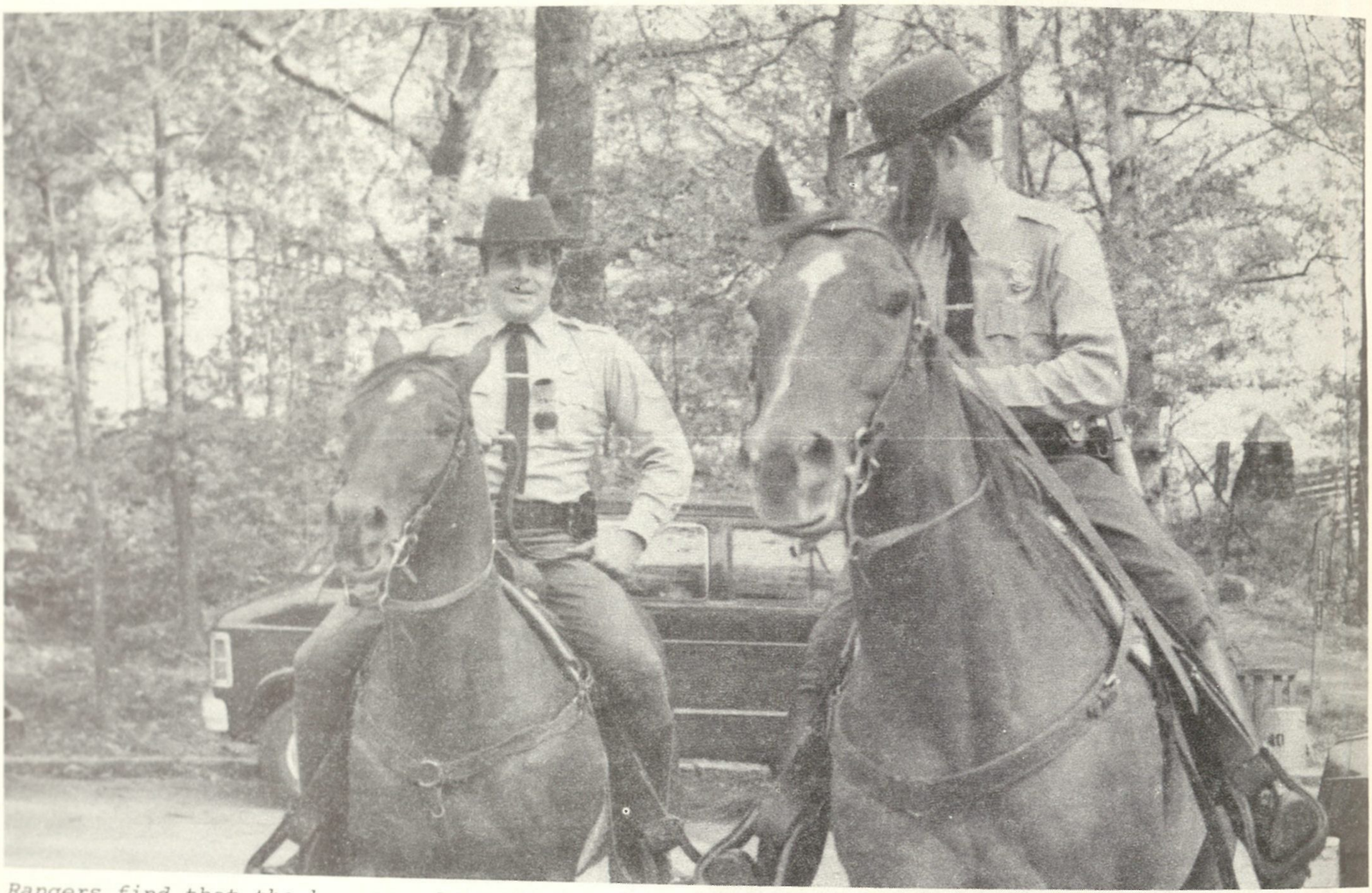
Ralph, Fred, and Sam are the first equine members of DEP's new mounted patrol program. Rangers Tim Skaats and John Johnston utilize the horses regularly at both Rocky Neck and Hammonasset Beach, two of the State's busiest recreational facilities. Although the program is only a year old, Skaats and Johnston feel that it has already proven beneficial.

All three animals were donated to the program by private citizens. Ralph, who's registered name is Irish Bar Dandy, was given by the James Thurlow family of Stonington. Sam's real name is Stampede Command, and he came from Rose Hill Farm in Ledyard. Both of these are quarter horses. Fred, who is a morgan, is registered as Whipporwill Cadence. He was donated by Joan Koonce of Old Lyme.

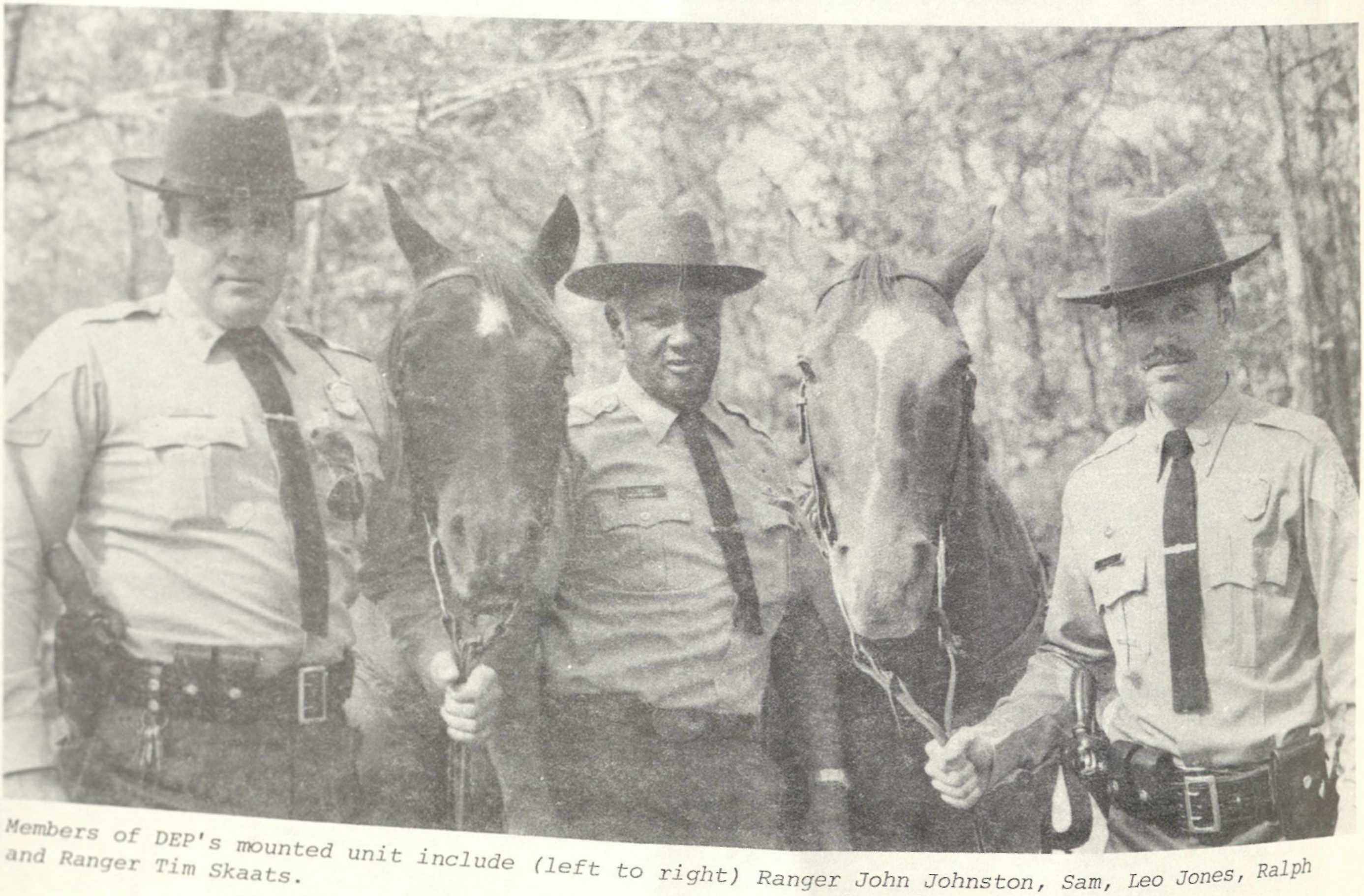
Using horses for park patrol work is not new. The National Park Service and several other states have had mounted rangers for many years. Indeed there once was a horse patrol at Hammonasset Beach in the late 1920's. The mounted policeman is also common in cities all over the country, and the number of law enforcement officers operating on horseback is actually increasing. It is not surprising, then, that Connecticut officials decided to give the horses a try.

According to Charles Day, DEP's Eastern District Operations Supervisor, quite a bit of ground work was done before the program was instituted. Department officials went to Jamaica Plains, Massachusetts to evaluate the training schedules of the Boston Mounted Police Unit. They also corresponded with the National Park Service, the New York City Police Department and the Philadelphia Police Department to gather information and ideas. Once the plan of action was developed, the implementation of the program was ready to begin. All that was missing were the horses.

As anyone who has ever considered purchasing a horse knows, it's an expensive proposition. Besides the animal, you need a bridle, saddle, halter, brushes, buckets, feed and a stable. The mounted program could never have gotten off the ground without the generous people who donated Ralph, Fred, and Sam and much of their tack. (Other prospective donors may be interested to learn that such donations are tax deductible.) Barns were built with lumber from state forests, and state property also yields the hay necessary to a balanced equine



Rangers find that the horses make their parking lot patrols more effective.



Leslie Bieber photos

Members of DEP's mounted unit include (left to right) Ranger John Johnston, Sam, Leo Jones, Ralph and Ranger Tim Skaats.

diet. Although there are continuing costs for grain, shoes, and vet bills, the program has been instituted for a reasonable price.

Neither Johnston nor Skaats had extensive experience with horses, and Ralph, Fred, and Sam had had no experience with DEP rangers. A training program for horses and riders was developed by Bob and Patty Brooks of Storybrook Stables in East Lyme, as horses and riders needed to learn the skills that would make them an effective team.

A major stroke of luck came to the program in the person of Leo Jones. A full-time employee at Gates Correctional Institute in Niantic, Jones has had many years of experience as a professional horseman. He volunteered his time and talents to care for the horses stabled at Rocky Neck and to provide the specialized training that they would need. A ranger's mount must, for instance, behave quietly while sirens scream next to him or a firearm is discharged from his back.

Skaats and Johnston acknowledge Jones' contribution. "We definitely couldn't have gotten the program going without Leo," said Skaats. "He's here every morning and evening to feed the horses, keep them exercised, and make sure they are in good health. We really needed someone who knew what he was doing to help us along."

By this past spring the rangers and their mounts were ready to begin their duties in earnest. Ralph and Sam were stabled at Rocky Neck, while Fred went to Hammonasset Beach with Ranger Johnston. As the season progressed, the horses were used primarily for patrol work in parking lots by day, and at the camp sites in the evening.

Both rangers agreed that the horses gave them a visibility which was impossible on foot or in a vehicle. "Not only can we see a lot of what's going on," said Skaats, "but people can see us more easily too. This might deter someone who is thinking about breaking into a car or camper." Johnston added that they are approached much more frequently while on horseback. "People will report things that are going on, or just come over to talk, about ten times more often when we're mounted. The horses are like magnets."

The mounted unit has also been assigned to work special functions. Last summer they did crowd control work at the Connecticut River Raft Race and at a fall muster at Putnam Memorial State Park. They have also been called in to search for lost children, and in one unusual case, for a police dog which had strayed while on duty. The riders maintain constant radio contact with other park personnel at all times, both for back-up and for safety. In addition, all saddlebags are fitted out with first aid kits so that field emergencies can be handled.

Johnston and Skaats feel that the only limitation with the program as it now exists is their own lack of time to devote to it. As DEP rangers, they are responsible for a much broader range of law enforcement activities than just the mounted patrols. In order to utilize the horses as efficiently as possible, seasonal employees and volunteers will take over some of the patrol duties.

The rangers pointed out that volunteers play a very important role in the horse program. They help feed, groom, and exercise the animals, freeing up DEP personnel for other work. Before you rush in to offer your services, however, a word of caution. Johnston said that he regularly has his volunteers do stall cleaning and grooming for at least a month before they ever get on the horses. That way, he says, he can "see if they are really serious about the program or if they just want to cowboy."

Leo Jones also helps to screen prospective volunteers, evaluating their horsemanship and general equine knowledge. Skaats calls Leo "very selective" when it comes to helpers. The preferred volunteer has a good horse background and is a late teenager or older.

Everyone involved with the horse patrols is enthusiastic about them and their future in the DEP. Skaats and Johnston call Ralph, Sam, and Fred three of the Department's best good-will ambassadors. They stress the horses' value in public relations, which they feel is at least as important as law enforcement. "People are still surprised to see them," the rangers said, "and the kids just love them."

So next summer, if you think you hear the clippety-clop of hoofbeats behind you at a State Park, don't be alarmed. Chances are it's either Ralph or Fred or Sam on his daily round.

(If you are interested in volunteering to work with the horse program, or if you have horses or equipment that you would like to donate, you can contact either Tim Skaats or John Johnston at 295-9523 or 566-3333.) ■

Watching our wastes

Hazardous Waste Management Section enforces federal and state hazardous waste laws

By Susan Subak, Environmental Intern

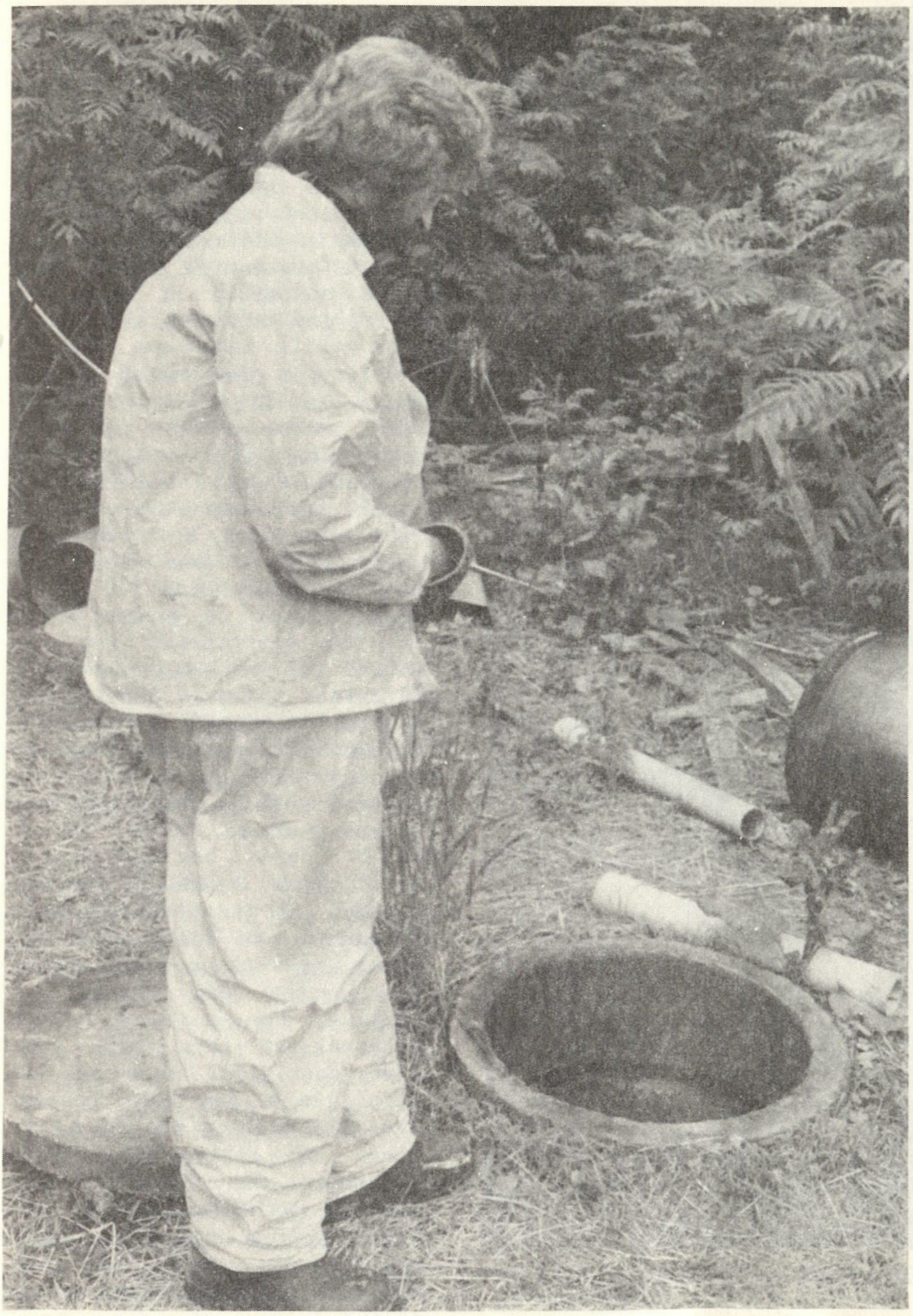
The silver hazardous waste tanker parked outside Custom Plating and Buffing Inc. measured more than half the length of the building. The abandoned property was the site of an intensive effort to clean up improperly stored hazardous materials. Two technicians from the company DEP had contracted with for the waste removal, Environmental Waste Removal Inc., wore masks and white jump suits as they went about their business, running hoses from the barrels to the transporter, and measuring the volumes of the contents in the storage tanks. Environmental Waste Removal Inc. would eventually remove more than 6,000 gallons of wastes containing cyanide from the property.

Arnold Devine, a field inspector at DEP known as "Buzz," finished taking samples of the wastes and watching the removal operations. He walked to the back of the building and pointed out four cement covers, the lids of interconnected underground holding tanks, each of which held about 100 gallons of metal hydroxide sludge containing high levels of cyanide. The shiny sludge, not to be mistaken for mud, was bright blue and green. The tanks had not been pumped out as required by law and the contents of at least one of the tanks had overflowed and seeped down the hill. Buzz indicated a path through the high grass near the building made by chemical wastes mixed with rainwater leaching down the hill. Less than 75 yards away lay the Naugatuck river, but according to DEP officials, the river was free from contamination.

The interior of the building revealed additional forbidding spectacles. The floor was damp with a mixture of rainwater and chemical residue remaining from the time the water level was ankle deep. Scraps of paper, metal filings, coffee cups, and an iron mesh table cluttered the room. Wastes were also visible in a square cement pool near the entrance and along a wall which was lined with dozens of 50 gallon drums. According to the technician, this hazardous materials site was fairly typical, only more cluttered than most.

The waste problem at Custom Plating and Buffing Inc. came to DEP's attention in two ways. A field inspector found the firm in general compliance when he inspected the site in April 1982 but deficient in filing a particular document. In December, the field inspector received notice that the firm had gone bankrupt on May 1, 1982, and he inspected the site to see if any hazardous materials had been left behind. At approximately the same time, the obvious neglect of the property and the odor of chemicals alerted a neighbor who reported the situation to local officials.

The State took responsibility for the clean-up in June 1983 and began attempts to collect funds from the banks holding a mortgage on the property: the First National Bank of Litchfield and Connecticut National Bank. Those negotiations, though bogged down in administrative procedures, are continuing. A variety of materials were removed from the property including cyanide,



Susan Subak photos

Field inspector Buzz Devine checks contents of underground holding tank at Custom Plating and Buffing site.

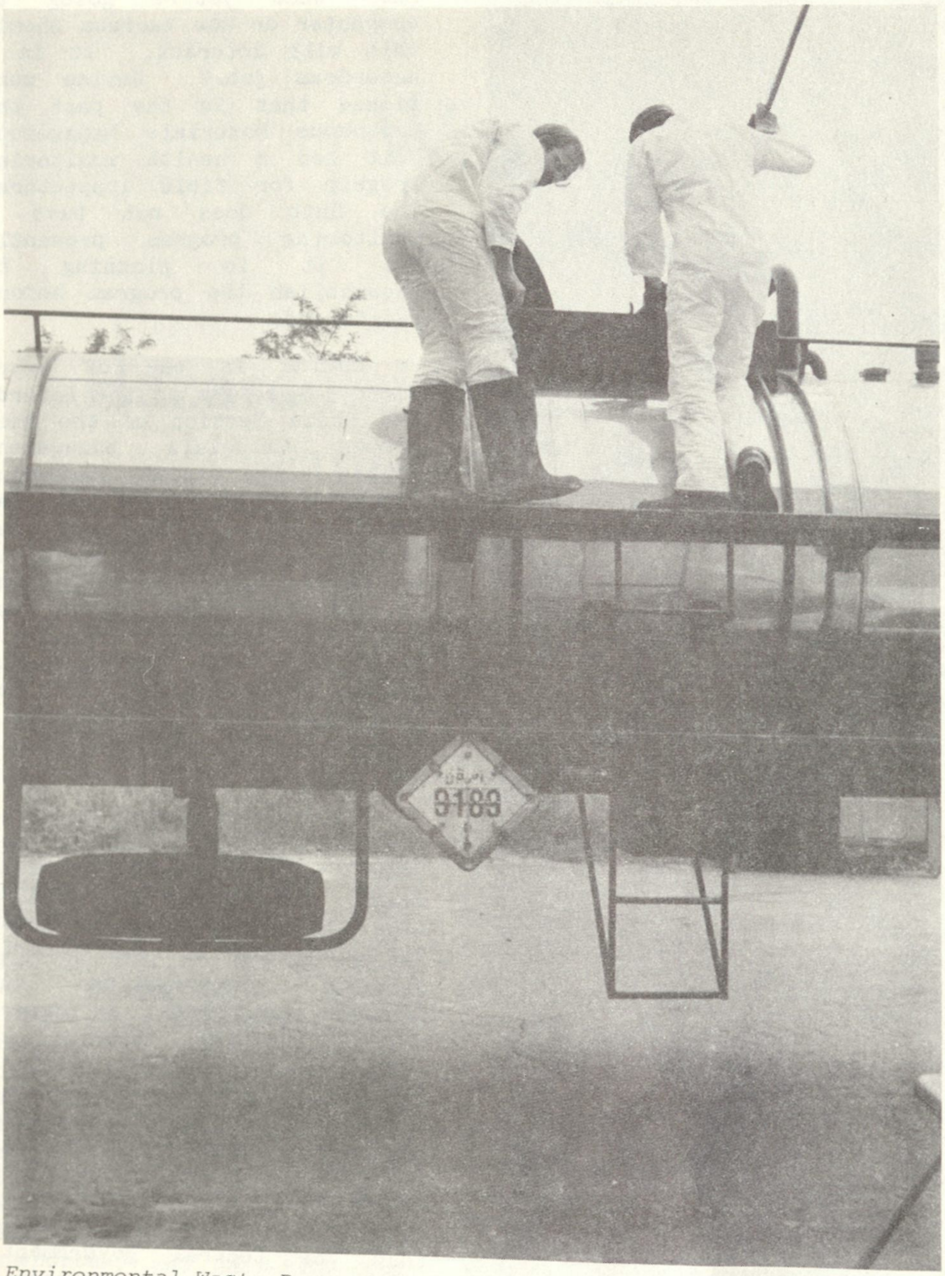
nickel sulfate, sodium hydroxide, cleaning solutions, corrosives. and flammable materials.

The final phase will require the removal of all contaminated soil. This step will be undertaken as soon as the Department has completed its review of soil and groundwater tests. The first phase of the cleanup, consisting of the removal of all contaminated material from the facility, was completed on August 11, 1983 at a cost of $90,000.

When asked about the hazards of the field inspector's job, Buzz Devine said that in cases of specialty coating firms such as Custom Plating and Buffing Inc, "You know what to expect. But at some disposal sites, you don't know what you're going to encounter or how various chemicals will interact. It is a hazardous job." Devine mentioned that in the past the Hazardous Materials Management Unit had a health monitoring program for field inspectors. The Unit does not have a monitoring program presently but it is planning to reestablish the program before year's end.

Devine is one of seven field inspectors in the Hazardous Waste Section of the Hazardous Materials Management Unit. The total hazardous waste staff at DEP has doubled from ten to 20 in the past year and is expected to double again by next year. The burgeoning of the staff comes at a time when the Hazardous Materials Management Unit is assuming greater responsibility for the protection of the public from a variety of hazardous waste problems.

The unit has been conducting over 1500 inspections per year. These visits include yearly inspections of facilities that are registered under the authority of the federal Resource Conservation and Recovery Act (RCRA) as generating, treating, storing or disposing of hazardous wastes. Since April 1982, DEP has had the authority to regulate hazardous waste generators, treatment, storage and disposal facilities, and transporters. As of June 1983, DEP, rather than the federal government, has the additional responsibility of issuing final operating permits to all generators and treatment, storage and disposal facilities. RCRA defines "hazardous wastes" as substances which may cause or significantly contribute to serious illness or death or that pose a substantial threat to human health or the environment when improperly managed. The state of Connecticut has 300 such facilities that are registered as hazardous waste generators or as facilities that treat, store, or dispose of hazardous waste. DEP also inspects the 150 waste trans-



Environmental Waste Removal Technicians pump hazardous wastes into tanker truck.

porters registered in the state.

In addition, the Hazardous Waste Section responds to approximately 250 complaints each year. Calls from the public are given top priority because they may be helpful in alerting the unit to potentially dangerous situations needing immediate attention.

The DEP is now taking an inventory of all facilities which they believe may generate hazardous waste. Three thousand facilities have been identified, the majority of which are located in the southwestern corner of the state. The statewide inventory, mandated by the legislature in 1979, was scheduled to be completed by 1982; however, due to staff limitations and an underestimation of the magnitude of the task, the inventory is only 60 percent completed. The DEP inspector prepares a report following each inspection which identifies the quantity and characteristics of the waste generated and any violations which have been observed. Enforcement action might be initiated which may include issuing administrative orders, notices of violation, and referrals to the attorney general's office if necessary. Connecticut was among the first states in the nation to undertake a state-wide inventory of sites suspected of generating or storing hazardous wastes.

It is from these evaluations that DEP is able to identify non-notifiers and abandoned dump sites. RCRA is not retroactive and thus does not cover cases where the site has been abandoned. Those sites where DEP believes that there may be a potential for an adverse impact to public health or the environment are submitted to the EPA as potential Superfund sites. Superfund is a federally-funded program that inventories and oversees the cleanup of the most serious hazardous waste disposal cases in the nation.

Cleanup tends to be very costly. It is more expensive, of course, to clean up a site after gross neglect than to pay for proper and timely disposal. For instance, proper disposal at Love Canal would have cost less than $2 million. As of May 1980, however, over $36 million had been spent there by state and federal government for cleanup. Relocating residents, health and environmental testing, health and liability costs, and other associated expenses are not included.

Disposal costs for most hazardous materials range from approximately $2 to $25 per metric ton, for disposing the material in a secured hazardous waste land disposal facility, to $75 to $2,000 per metric ton for incinerating the material. A substance is automatically considered hazardous if it is listed in the "Code of Federal Regulations" published by the Environmental Protection Agency. If the substance is not listed, it may still be a hazardous waste if it meets the definition for ignitibility, corrosivity, reactivity. or Extraction Procedure (E.P.) toxicity.

The EPA estimates that 60 percent of all industrial hazardous wastes come from the chemical and allied products industry. The remainder are generated by industries manufacturing machinery, primary metals, paper and allied products, fabricated metal products, and stone, clay and glass in that order. These industries generate approximately 77,140,000 pounds of hazardous wastes annually, and the EPA estimates that only about 10 percent of these are disposed of in an environmentally sound manner.

According to Ed Parker, Assistant Director of the Hazardous Wastes Section, Connecticut has a comparatively large number of hazardous waste disposal sites. The state has 90 percent of the land disposal facilities and three of the largest hazardous waste treatment facilities in New England, yet Connecticut has one of the smallest Hazardous Waste Management Units in the six-state New England region. For example, Connecticut and Massachusetts have a comparable number of facilities to be regulated, yet Massachusetts has three times the staff.

RCRA mandated in 1980 that all waste storage facilities, as well as generators and disposal and treatment plants, must apply for a permit in order to continue operations. New facilities cannot enter the hazardous waste business without first obtaining a permit. A permit is issued when the applicant has been inspected and evaluated and a public hearing has taken place to offer the public an opportunity to participate, and to review the requirements for the specific firm to safely produce, transport, or treat any hazardous wastes.

Parker explained that DEP's goal is to make Connecticut the best example of hazardous waste management in the nation. Connecticut is apparently proceeding in that manner as it became the third state to obtain Phase II authorization to issue final operating permits and one of the first states to submit an application for final program authorization. Says Parker, "We have completed the process of adopting comprehensive hazardous waste regulations, and are now hiring the staff needed to insure that compliance with the regulations is achieved."

Interior of Custom Plating and Buffing building. Drums of waste and chemical residue were left behind when the company declared bankruptcy.

Connecticut has prosecuted recalcitrant firms and can point to some success. Says Buzz Devine, "Enforcement is definitely stepped up. The cases aren't easy but nothing is." For example. a $15,000 fine was recently levied against Hitchcock Engine Company for not possessing a transport permit, and $40,000 was assessed against the Connecticut Aerosal Company for not holding a storage permit. Penalties can be imposed at up to $10,000 per day per offense. Moreover, criminal penalties can be charged against persons knowingly and willingly violating hazardous waste laws. For instance, forging documents, or transporting, treating, or disposing of wastes without a permit may be subject to criminal penalties. Criminal penalties have been charged in a case in Bristol, where Connecticut Treatment Corporation was fined $50,000 for illegal treatment and storage of hazardous wastes. The vice president of the company, Donald McLelland, was arrested and charged with two counts of manifest violation, which is neglecting to include a shipping document accompanying a waste transporter. He was fined $30,000 and received a two year suspended sentence. DEP has issued 71 notices of violation and 75 administrative orders since June 1982.

Because the Hazardous Waste Section is taking on added permit responsibilities, the federal program grant will increase in order to provide additional staff. In addition, the state has authorized the creation of six new positions. The staff additions will allow for more frequent inspections, and for additional permits to be processed. According to Ed Parker, facilities should be inspected four times a year to assure compliance. As it is, however, these facilities are only inspected once a year due to staff limitations. Consequently, operators may be negligent much of the year, knowing that a DEP inspector will appear only once annually. Spot checks will help insure that requirements are taken seriously.

Parker believes that this situation will improve. "The public awareness of the hazardous waste problem is very good in Connecticut. However, the public appears to have underestimated the extent of DEP's obligations. The extraordinary dedication of the staff has made it possible for Connecticut to have one of the leading hazardous waste management programs in the country." ■

Nature Notes

The pond in winter

By Penni Sharp

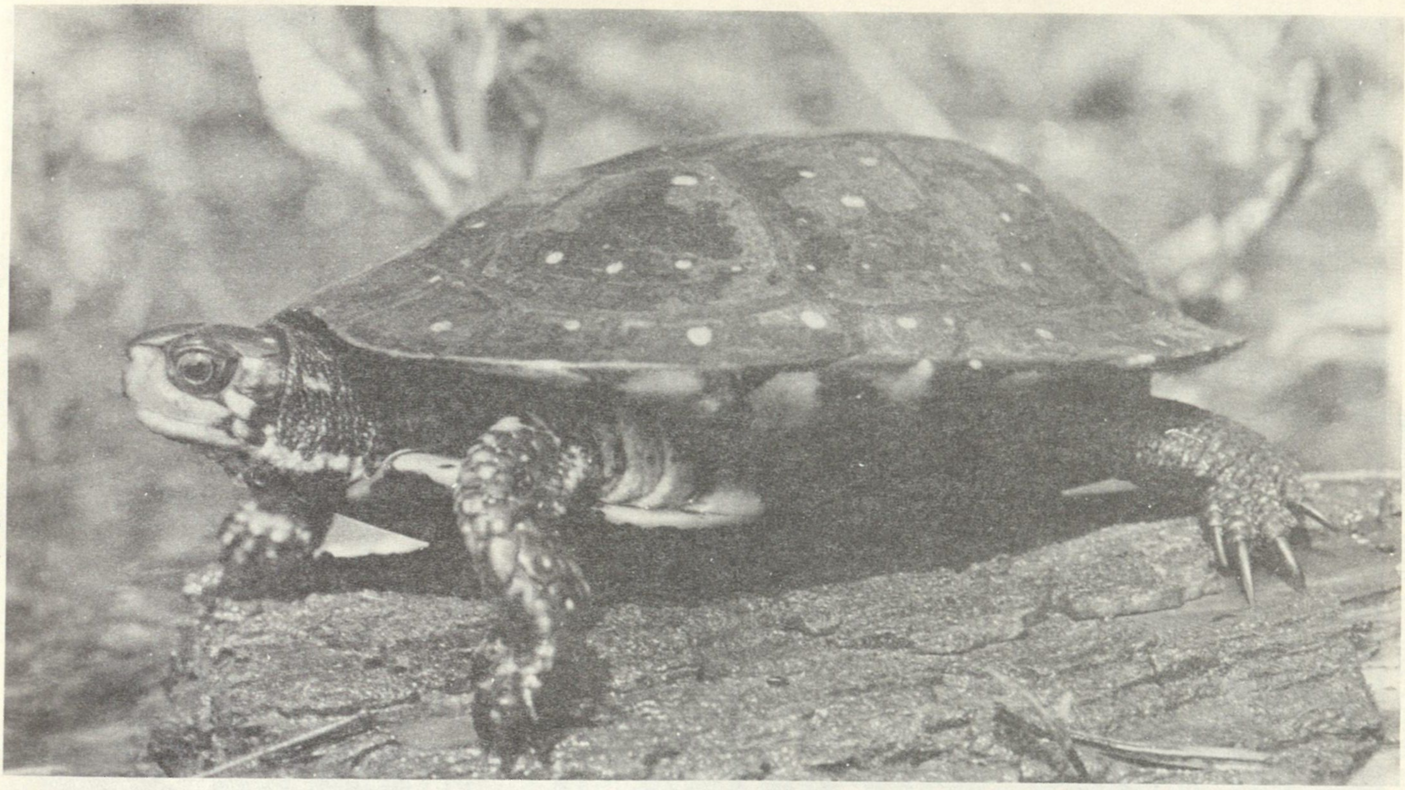
By January, the Connecticut landscape is usually well frozen over, and many of our local animals have sought refuge from winter's icy blasts by leaving for warmer climes or by spending winter in a state of torpor known as hibernation. While many of us are aware that a number of familiar bird species have flown south and also know how our common mammals may be spending their respective winters, how many of us know what befalls the aquatic dwellers around us? In the summer time, our swamps, ponds and lakes teem with life, but by winter ice may have frozen over the wetland environments. Sometimes cold temperatures are so severe that even our large lakes freeze over. When this occurs, what happens to the multitudes of insects, the amphibians, the reptiles and other animals that dwell in and around the freshwater habitats?

Water has several unique properties which make it a favorable dwelling place for many creatures. For one thing, water maintains relatively even temperatures, changing gradually as the seasons progress. This means that aquatic animals do not have to cope with sudden dramatic alterations to the temperature of their environment.

Ponds undergo seasonal changes due to the behavior of water as temperatures change. Water will layer itself according to temperature and density. Water contracts as it cools, becoming more dense and heavy (and sinking toward the bottom) until it reaches a temperature of 4 degrees Celsius or 39 degrees Fahrenheit. From 4 to zero degrees C (39 degrees to 32 degrees F) water expands, and a cubic foot of water at zero C actually weighs less than warmer water at 4 C and will rise toward the surface. This property of water enables frozen water (ice)to float. It also causes turnover of pond water in spring and autumn as temperatures rise and fall respectively.

Ice covering ponds can act like an insulating blanket protecting the creatures in the water below. However, at the same time, ice-covered ponds tend to be more stagnant and may have less oxygen than they do at any other periods of the year. Fortunately, the capacity of water to hold oxygen increases as the temperature decreases. Simultaneously, the cold slows the metabolism of the animals thus lowering their oxygen demand. Nonetheless, oxygen supply at the depths may become a critical factor in a long, ice-bound winter. At first the zone of oxygen scarsity may be restricted to the bottom. But if photosynthesis ceases because snow over the ice blocks out light, and ice prevents the replenishment of oxygen from feeder streams, the zone of scarcity may approach the surface. Different aquatic animals have developed different strategies which enable them to survive the winter in such cold and oxygen-depleted surroundings.

Pond turtles, so fond of the warming sun during spring and summer, spend the winter in the mud at the bottom of ponds. Both the painted turtle (Chrysemys picta) and the spotted turtle (Clemmys guttata) dig into the mud layer and remain there until the temperature warms in the spring. These turtles, although they spend most of their time in ponds, are air breathers like their more terrestrial relatives. They have special adaptations for respiration under water. Accessory bladders are adjacent to the urinary bladder. They can be filled and emptied with water and are well supplied with blood vessels. The turtles can thus receive oxygen with each intake of water.



Spotted turtle (Clemmys guttata) Leonard [illegible]ee Rue III

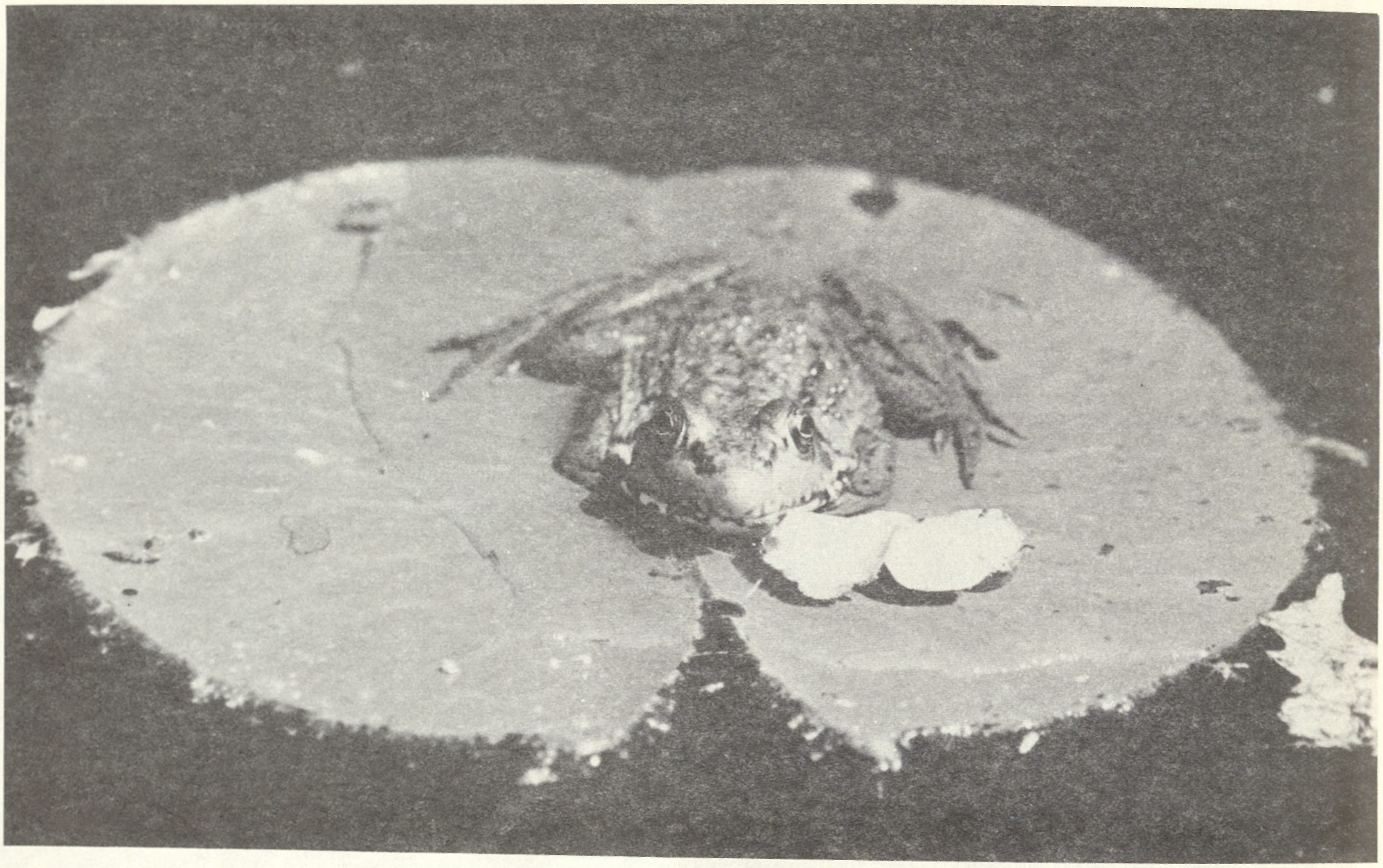
During winter, the metabolism of turtles is so reduced that they require little oxygen and thus are able to survive under water for the duration of winter.

Frogs in the adult stage are also air breathers. One of the handsome frogs of local ponds and streams is the leopard frog (Rana pipiens). It is olive green with dark spots edged with white. Beginning in early fall, the frogs become disinterested in feeding and are found near marshes and streams. By October's end, they have usually entered their winter dwelling places. Some choose the soft mud at the bottom of a pond, but many will enter shallow streams, nudge their way under the stones, and lie with their heads bent and legs sprawled out. Their presence may be revealed to the keen observer who may notice an uncovered foot. Other common frogs, the pickerel (Rana palustris) and the green (Rana clamitans) spend winter in a similar position and locale. Green frogs seldom dig in, but are content to wedge under stones. Frogs are sensitive to temperature changes, becoming less and less active as the temperature falls. At around 40 F, frogs are inactive and at only slightly warmer temperatures are searching for places to hide. They emerge in spring when the air temperature approaches 50 F. Frogs have been reported to make winter appearances during mild years. The sure sign of winter's end is the spring chorus of frogs and toads, and this occurs when temperatures have risen to 60 F.

All amphibians begin their preparation for winter during late summer. At this time, they feed heavily, both day and night in some cases, storing up fat that will help them through the winter. In early fall, they begin to move towards their winter quarters, some singly, some in small groups. Red-spotted newts (Notophthalmus viridescens) have been observed in large numbers moving toward the water where they will spend the winter. Newts have an interesting life cycle which may include a terrestrial phase known as a red eft. Efts spend winter on land in the forest floor litter or under a log. Occasionally an adult newt will leave the water and spend winter as do the efts; however, it is more common for newts to remain semi-active in an aquatic setting. The group migrations are generally made by nearly mature adults which have completed the eft phase. At this stage, they return to water, usually for the remainder of their lives.

Newts spending winter in ponds and brooks continue to feed although in lesser amounts than in summer. Studies indicate that they continue to molt all winter, a further sign that they remain active beneath the surface of the ice.

When pond ice is clear, a look through it may reveal a number of fish moving slowly about in the cold water beneath. Fish remain active throughout winter although the degree of activity varies according to species. Yellow perch (Perca flavescens) feed readily throughout the winter. Their diet consists primarily of insects, crustaceans and fish. Along with pickerel



Green frog (Rana clamitans) Irene Vandermolen

(Esox spp.), yellow perch is an important part of the winter catch. Ice fishing is a popular sport in areas with large lakes that freeze over. Most of the fish caught in the winter are predaceous species such as the two just mentioned.

Other fresh water fish, for example the common carp (Cyprinus carpio) and the basses (Micropteruss spp.), are far less active. They rest quietly near the bottom of lakes and ponds seldom feeding. Carp may even burrow into the mud.

Winter can occasionally be devastating for fish in shallow ponds. Fish need more oxygen in winter than do the other animals because they remain active. If oxygen depletion occurs, many fish may die. Extremely shallow ponds may freeze so deeply that fish actually become trapped within the ice.

Fortunately for the fish, a number of aquatic insects also are active or semi-active during winter, so lack of food is rarely a problem. Dragonflies (Odonata) overwinter as nymphs and spend most of their time near the bottom of ponds in decaying plant material. Their metabolism is considerably lowered. They do not molt during winter and growth is slowed; however, they continue to feed, although not as voraciously. May flies (Ephemerida) behave in much the same way. They are strictly herbivorous and feed on algae, diatoms, and other plant material sifted from the bottom.

The water bugs (Hemiptera) are air breathers, thus must spend the winter where oxygen is available. The water boatman (Arctocoriza Interrupta) is a slender water bug with long hind legs adapted for swimming. In the water, water boatmen resemble miniature rowboats with oars. When ponds freeze over, these insects have been observed clumped together in air pockets underneath the ice. They remain dormant while temperatures are below freezing.

Water striders (Gerris spp.) or pond skaters are probably familiar to all who have ever visited a pond. They are slender, long-legged insects that skate about on the water's surface film.

They spend winter amongst the decaying vegetation at pond or brook bottoms or along the banks of streams. They will come to the surface at times and can even be observed "skating" slowly during periods of thaw.

Despite the fact that a frozen pond or marsh can appear to be a lifeless environment during winter, there is activity beneath. Many animals move about searching for food albeit more sluggishly than at other times. Other creatures are dormant during this stressful period. If you are fortunate enough to live near water -- a pond, lake, stream or swamp -- pay a visit this winter and see what signs of life there are to observe. ■

Where there's smoke

Coal and wood stoves can contribute to air pollution

By the New Hampshire Air Resources Agency

Wood and coal were the most popular fuels of the 18th, 19th and early 20th centuries. After nearly 50 years of decline, they are now well respected sources of energy for home heating. A noticeable increase in their popularity over the past six years has been spurred by the steady rise in costs and difficulty with the supply of oil, gas, and electricity. Connecticut residents have increasingly turned to coal and/or woodburning heating devices to supplement conventional energy systems.

This recent revival of wood and coal burning has begun to cause concern about the resulting impacts on air quality. In response to this concern the following information has been compiled to educate the solid-fuel-burning homeowner by outlining operating methods which can be used to minimize adverse impacts and increase combustion efficiencies.

Coal and wood burning devices are sources of air pollution whether used in a residential, commercial, or industrial capacity. Unlike large, efficient, commercial or industrial sized furnaces and boilers, home heating units are run at temperatures so low that 20-25 percent of the fuel is never totally burned. This remaining unburned fuel goes right up the chimney as smoke or gases. Federal and state codes restrict the level of emissions from large commercial and industrial furnaces and boilers. No such restrictions exist for residential wood and coal burning devices, although some locations in the country are considering such measures.

In Albuquerque, New Mexico; Missoula, Montana; and Portland, Oregon, woodburners have been asked to voluntarily shut down their units on days of dangerously low air quality. Vail, Colorado has expressed a concern for their own air pollution problem by limiting the number of wood or coal units installed in new homes. In St. Louis, Missouri all hand-operated coal burning appliances have been banned by the Missouri Department of Natural Resources.

Concern about the impact of residential coal and wood burning on air quality is centered on the localized effects woodstoves, coalstoves, and fireplaces have on visible air quality and potential health problems. Their impact on ambient air quality varies depending on the number of stoves in a given area, the local terrain, and weather conditions.

The U.S. Environmental Protection Agency is currently conducting research aimed at reducing air pollution from residential and industrial woodburning. One of their studies includes the testing of air quality in Lyme Center, New Hampshire, where wood is a primary source of heat; others are looking at stove emissions and combustion methods to minimize those emissions. It is clear from preliminary results of these studies that there is a need to evaluate the impact of residential wood and coal combustion on air quality.

Fuel Burning Tips

Wood Burning

Burn wood seasoned (dried) for six months to one year minimum.

Start a fire with paper and dry kindling followed by small sticks.

Never use gasoline or lighter fluid to start a fire.

Burn each new load of wood briskly for 10-20 minutes to drive off moisture and reduce creosote in stovepipe and chimney.

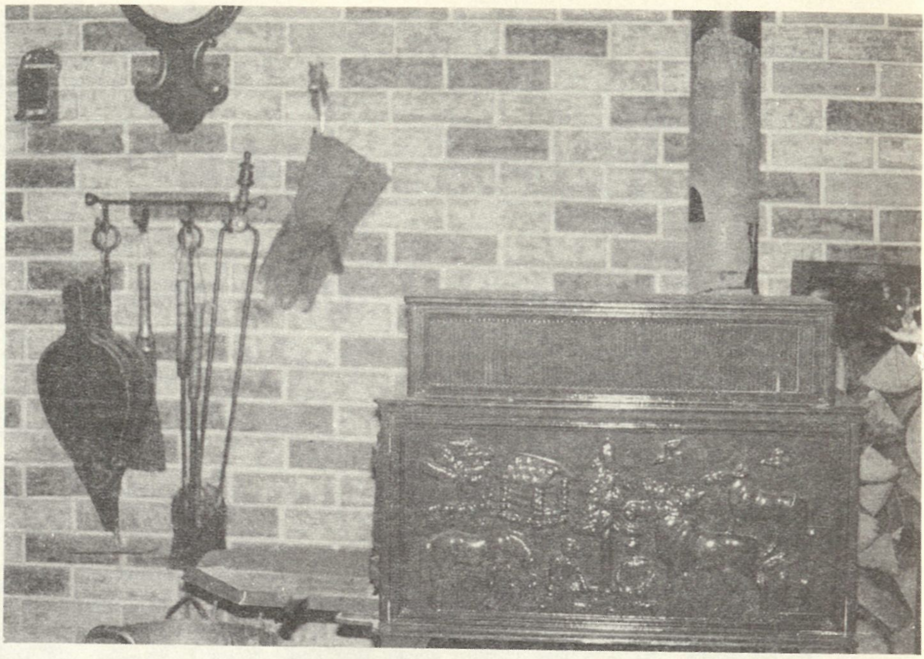
Maintain clean hot fire by adding wood gradually, two-three pieces at a time and using sufficient draft.

Do not overload stove, allow for air circulation in firebox.

Maintain sufficient draft smoldering when leaving stove untended for long periods. This will prevent excessive smoke.

Do not burn plastic, trash, or garbage which release corrosive and toxic pollutants.

Protect bottom of stove by leaving a 1-2 inch layer of sand or ash in bottom of stove.



The proper operation and maintenance of a stove can help to reduce air pollution. (Cat in woodpile is optional equipment.)

Coal Burning

Burn anthracite coal of the lowest possible sulfur, ash, and moisture content.

Buy only sizes listed as suitable for your stove.

Start a fire with paper and dry wood kindling, add a thin layer of coal to start with and carefully increase the depth up to about 8 inches.

Keep the drafts open until the coal is near to being completely ignited, then close the drafts (make sure the ash door is closed) to prevent over-heating of the stove.

Never let the fire approach going out, as a coal stove is much harder to get going and takes longer to reach optimum temperatures than a wood stove.

The secondary air supply in all coal stoves should be kept open enough to convert poisonous CO gas to CO_2 which is not poisonous and indicates a cleaner burn.

Shake the grates only to make room for more fuel, or as excessive ash has built up on the grate. Once or twice a day is sufficient.

Don't over shake; stop after exposing live red coals.

Operate to maintain a steady, hot fire, increasing the draft to help preheat the coal after reloading.

Protect coal grate from direct contact with fire by leaving a 1-2 inch layer of ash on the grate.

Maintenance Tips

Wood Burning

Stoves should be properly installed and maintained to prevent stove-related fires.

Check stove pipe for creosote build-up and have chimney checked by a professional at least once a year.

Check stove for cracks in firebrick or leaks in metal at corners or welds.

If chimney fire occurs, have chimney inspected before using it again.

Coal Burning

Never allow ashes to build up in ash pit high enough to impede air flow. Excess ash build-up can cause fires to go out and cause severe damage to grates.

When clinkers occur in grates allow fire to die out and remove them from above the grates.

Clinkers form when:

Too much draft, fire is to hot

Bed of coals is too shallow or too deep

Excessive shaking is done

Fire is poked from the top

Poor quality, high ash coal is burned

Draft is turned down too much after a long hot fire

Types of Heating Units

The trend today is towards producing more efficient wood and coal burning stoves which extract more heat from the fire. These newer air-tight stoves allow the fire to burn with a minimum supply of air often causing incomplete combustion of the fuel. This starved air type of combustion is causing concern not only because of the amount of smoke produced but also because of the higher levels of carbon monoxide and POM's (polycyclic organic matter) produced. Complete combustion requires sufficient fuel, air, heat and time. Proper stove design, i.e. baffles or secondary combustion chambers, attempts to meet these criteria. Stove size is also important since an oversized unit would probably be operated near its minimum output rate with insufficient oxygen and too low a temperature to achieve complete combustion.

Wood Burning

Fireplaces
  Low efficiency (10%-20%)
  Incomplete combustion of gases
  Poor fire control
  Excess-air combustion
  NO_x (Nitrogen Oxides) production high

Non air-tight stoves
  Medium efficiency (20%-30%)
  Poor fire control
  Excess-air combustion
  NO_x higher than air-tight stove

Air-tight stoves
  Higher efficiency (55%-65%)
  Good fire control
  Starved-air combustion
  CO and POM's higher

Furnaces
  High efficiency (60%+)
  Good air control
  Good fire control
  More complete combustion

Coal Burning

Stoves and Heaters
* Must have properly sized firebox @ 14 inches in diameter and 10 inches deep.
* Must have a coal grate within shakers.
* Must have primary and secondary air supplies.
* Must be used with recommended coal sizes matched to the distances between the grate openings.

Combination Coal/Wood Burning

Must have liners to shape the firebox for efficient burning of either fuel.

Must have space for air circulation between the coal grate and stove bottom.

Must have provision for shaking ashes from coal-fire.

Must have ashpan for convenient ash removal.

The Pollutants

The study of pollutants emitted by wood and coal burning can be a complex and confusing matter due to the technical methods involved in measuring the many chemicals present and the methods used to evaluate and present the resulting statistics. For those interested in a more scientific approach to this subject a bibliography of related studies and publications can be obtained by contacting the Agency at the address included at the end of this article.

Pollutants Generated by Wood and Coal Burning

Particulate Matter

Black Smoke
  Large particle size, impairs visibility and causes health problems.

White Smoke
  Small particle size, impairs visibility and causes health and respiratory problems.

Gases

Sulfur Oxides (SO_x) - corrosive

Oxides of Nitrogen (NO_x) corrosive

Hydrocarbons (HC) impair visibility (smog)

Polycyclic Organic Matter (POM's) adverse health effects, potential carcinogens

Carbon Monoxide (CO) - poisoning at high concentrations

Variables Affecting Air Pollutants Generated by Wood and Coal Burning

Wood

Moisture Content
  Seasoned wood burns more efficiently and with higher heat value than green, wet wood.

Seasoned wood
  Potentially lower air pollution.

Green, wet wood
  Potentially higher air pollution.

Density
  Heaviest woods have highest heating values per cord when seasoned.

Splitting
  Reduces drying time, allows more efficient combustion, produces less air pollution.

Coal

Sulfur Content
  The higher the sulfur content, the more SO_x pollution generated.

Ash Content
  The higher the ash content the more soot, smoke and clinkers produced when burned in home heaters.

Moisture Content
  Low moisture content coal produces less air pollution and has a higher heating value.

To page 22

The coming of the Nautilus focuses attention on Groton's Waterfront

By Diane Giampa, Public Participation Coordinator

Almost thirty years ago, the U.S.S. Nautilus was built at the Electric Boat Division of General Dynamics in Groton. The world's first nuclear-powered submarine is expected to return to Groton by 1985 after undergoing some renovation on the west coast. When it returns to Connecticut, it will occupy a permanent berth at Goss Cove, just south of the Submarine Base off Crystal Avenue and Military Highway.

The anticipated arrival of the Nautilus has directed attention to the Thames riverfront area, and both the City and the Town of Groton, as an outgrowth of their Municipal Coastal Programs, conducted special studies of their coastal frontage through funding provided by the Connecticut Coastal Area Management Program.

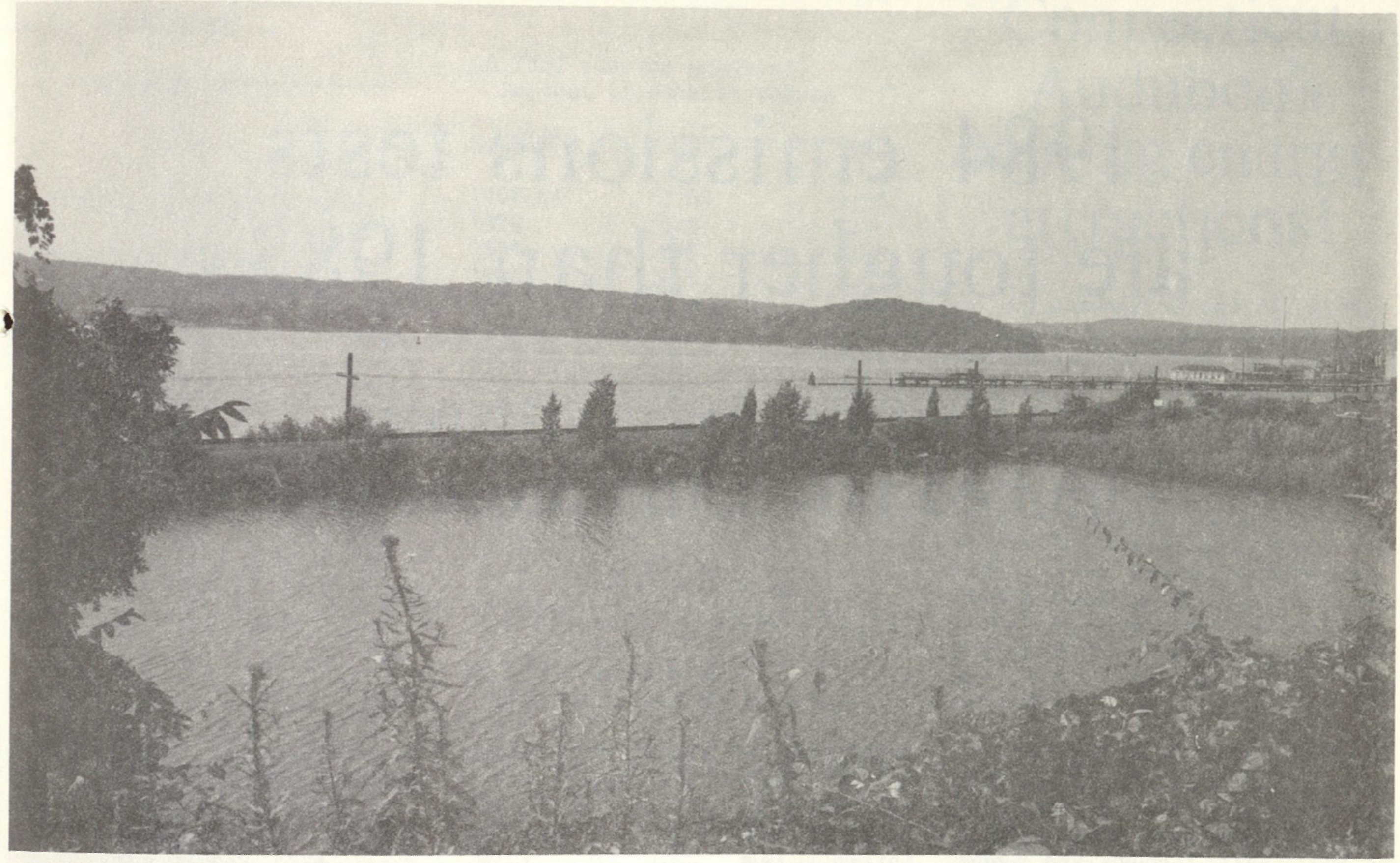
The City of Groton has oriented its study around historical Thames Street, a section of the city that was once the center of the whaling and shipbuilding industries for which Groton was well known. In the 1940's, the Gold Star Memorial Bridge was built, and it bypassed Thames Street completely and shifted the major traffic patterns away from the area. This was a mixed blessing for the city. On the one hand, Thames Street remains a remarkably intact 19th century community; many of the buildings found there date from the late 1700's and early 1800's. However, the economic base of the street has declined in recent years and access to the waterfront is limited.

Members of the City of Groton's Planning and Zoning Commission would like to see the city's shorefront linked to the proposed Nautilus installation by a "water taxi," a passenger boat with stops at key locations on Thames Street. They are planning to enhance public access to the river by creating a series of walkways and other spaces along the water. The Commission would also like to establish a Visitor Center in a central location, where people could receive information on what there is to see and do in Groton and perhaps enjoy interpretive exhibits on the history of the City.

The Town of Groton's Planning Commission and its Zoning Commission are considering establishing a Nautilus Memorial Zoning District since they recognize that the integrity of the site must be maintained in the face of potential development pressures that may arise once the submarine is in place.

The Town also anticipates and is planning for increased tourist activity and knows that it must address the problem of limited access to the waterfront for residents and tourists alike. The tracks of the Providence and Worcester Railroad run along the entire riverfront in the Town of Groton, and planners are putting a great emphasis on finding and identifying potential access points to the Thames. On the narrow strip of land between the tracks and the river, they are considering putting such recreational features as a jogging trail, a small fishing pier, and picnic tables.

The Nautilus site could well be one of the largest and most significant tourist attractions to the state in recent years. Both the City and Town of Groton are working hard to make certain that the development and use of the area is consistent with Connecticut's and their own municipal coastal policies and guidelines.



Charlie Evans

The site of the proposed berthing facility for the Nautilus at Goss Cove in the Town of Groton. A Visitor's Center and a Museum are planned for the northern end of the Cove. The submarine will rest parallel to the railroad tracks.

coastal
area
management
71 capitol avenue hartford, conn. 06106

1984 emissions tests are tougher than 1983's

Test evaders will be hunted down and prosecuted

By John Waters

The fact that your car passed 1983 emission tests for hydrocarbons (HC) and carbon monoxide (CO) doesn't mean that it will sail through the 1984 tests with flying colors. For example:

Vehicles of 1981 model year or later whose gross weight is up to 8,500 pounds will be allowed only 220 parts of HC per million, and only 1.2 percent of CO in the exhaust volume. These figures are about 20 percent more stringent than the 275 and 1.5 allowed in 1983. For earlier model years, the reductions are about the same.

For heavy-duty vehicles (8,501 to 10,000 pounds), 1984 standards will be about 30 percent more stringent. For earlier model years, the reductions are about the same.

To find the 1984 requirements for your vehicle's model year and weight, refer to Table 1, 2, or 3.

1983 Results

Reporting to the Legislature on the first three months of the 1983 testing program, the Department of Environmental Protection said that more than 400,000 tests were made, with an overall failure rate of 17.1 percent. The rate for the initial test only was 16.9 percent. (Failure rates tend to be higher for cars that require fix-ups after flunking the initial test.) The first-quarter testing reduced CO pollution from cars and trucks 23 percent and cut HC pollution 40.2 percent. Ninety-six percent of the car owners scheduled for tests in the first quarter took them.

The older its model year, the more likely a vehicle is to show increases in its HC and CO emissions. The failure rate for model years 1975 through 1977 is significantly higher than that of older or newer vehicles. One reason is that from model year 1975 on, standards were made stricter because carmakers improved their emission controls with catalytic converters and other technology.

Although older vehicles (more than seven model years old) had higher average emissions, there were not nearly so many of them as cars in the three-to-seven year group. As a result, the latter have a greater effect on the ambient air than either the old-timers or the newer vehicles. However, even though many of the middle-aged cars have become major polluters, they usually can be adjusted or tuned to comply with little effort and cost if they have been properly maintained. Most of them need only one retest, and an improvement of about 50 percent in both HC and CO can be expected.

DEP points out that percentages derived from tailpipe readings are not an exact measure of the amount of improvement in air quality, which is determined by measuring atmospheric CO and ozone. Such figures will not be available before the end of 1983.

Crackdown on Test Avoiders

In 1984, the Motor Vehicle Department will continue to crack down harder on owners who duck the tests or who do not display the proper stickers on their windshields. Spot checks will be made on windshields all over the state. The penalty for not obeying the law could be loss of your registration or a $100 fine or both.

Table I

VEHICLE UNDER 6,000 LBS.

HC TEST (Hydrocarbons)
PPM (Parts per Million)

Model	1984	1983
1968-69	750	950
1970	650	800
1971	650	800
1972	575	725
1973	425	525
1974	425	525
1975-78	300	375
1979	300	375
1980	275	350
1981 & later	220	275

CO TEST (Carbon Monoxide)
Percent of exhaust volume

Model	1984	1983
1968-69	7.5%	9.5%
1970	7.0	9.0
1971	6.0	7.5
1972	6.0	7.5
1973	6.0	7.5
1974	6.0	7.5
1975-78	3.0	4.0
1979	3.0	4.0
1980	2.5	3.0
1981 & later	1.2	1.5

Table II

VEHICLE: 6,000-8,500 LBS.

HC TEST (Hydrocarbons)
PPM (Parts per Million)

Model	1984	1983
1968-69	850	1,050
1970	700	875
1971	700	875
1972	700	875
1973	700	875
1974	500	625
1975-78	500	625
1979	300	375
1980	275	350
1981 & later	220	275

CO TEST (Carbon Monoxide)
Percent of exhaust volume

Model	1984	1983
1968-69	7.0%	8.5%
1970	5.5	7.0
1971	5.5	7.0
1972	5.5	7.0
1973	5.5	7.0
1974	4.0	5.0
1975-78	4.0	5.0
1979	3.0	4.0
1980	2.5	3.0
1981 & later	1.2	1.5

Table III

VEHICLE: 8,501-10,000 LBS.

HC TEST (Hydrocarbons)
PPM (Parts per Million)

Model	1984	1983
1968-69	850	1,275
1970	700	1,050
1971	700	1,050
1972	700	1,050
1973	700	1,050
1974	500	750
1975-78	500	750
1979	300	450
1980	300	450
1981 & later	300	450

CO TEST (Carbon Monoxide)
Percent of exhaust volume

Model	1984	1983
1968-69	7.0%	10.5%
1970	5.5	8.0
1971	5.5	8.0
1972	5.5	8.0
1973	5.5	8.0
1974	4.0	6.0
1975-78	4.0	6.0
1979	3.0	4.5
1980	3.0	4.5
1981 & later	3.0	4.5

■

Connecticut Audubon's coming energy attractions!

On January 12 and 26, 1984, 9 a.m. to noon, Connecticut Audubon will offer a two-day window insulation workshop. It's $15 for members; $18 for the public.

On Saturday, January 14, from 10 a.m. to noon, they'll hold a lecture on how owners of one to four family housing can obtain funds at favorable rates for energy conservation and solar energy projects. Cost is $2 for members; $5 for non-members.

Tuesday, January 24 at 7:30 p.m. there will be a lecture on trimming home electricity bills; $2 for members; general public, $3.

All of these will be held at the Connecticut Audubon Center, 2325 Burr Street, Fairfield. Call 259-5606 for more information. ■

Beware

From page 21

for environmental degradation arising out of activities of the seller.

A seller's unwillingness to negotiate such a statement might further alert the buyer to the need for investigation about the property.

A similar dilemma exists when a piece of property is leased for use by a company which deals in toxics as a product or by-product. It is often the owner of the property who finds himself with a clean-up to expedite after the lease expires. Similar precautionary measures should be incorporated into the lease agreement for such properties. ■

Down the drain

Septic systems may be hazardous to your health

By the South Central Regional Water Authority

If your house is not connected to a sanitary sewer, your wastewater probably goes into an on-site septic system. Any household waste from the toilet, garbage disposal, dishwasher, sink, or tub, or washing machine flows into the septic tank where solids settle out and grease and other light materials float to the surface. The liquid portion of the waste leaves the tank, percolating into the solid through the absorption or leaching field.

Most bacteria, viruses, and other organic matter are removed or broken down in the soil. However, many household products contain dangerous synthetic chemicals that are not removed by the soil. Major categories of products that often contain chemicals that are hazardous in drinking water are listed below. These may be carried with the wastewater into the soil and ground water and eventually find their way into a public or private well, making it unsafe to drink.

Many of these chemicals can be harmful in extraordinarily small amounts. For example, one pint of a common degreaser that is found in several household cleaners can pollute ten million gallons of water. This is a year's supply of water for 500 people.

Some septic tank cleaners are among the worst offenders. In general, septic tank cleaners should be avoided. Additives and home remedies generally will not improve your septic system's performance and some may actually harm the beneficial bacterial action in the tank. If your septic system is not functioning properly, your local health department can advise you about possible corrective measures. You may need to call a septic tank cleaning company to pump out the tank or identify the cause of the problem.

GENERAL CATEGORIES OF CONSUMER PRODUCTS WHICH MAY CONTAIN CHEMICALS TOXIC IN DRINKING WATER

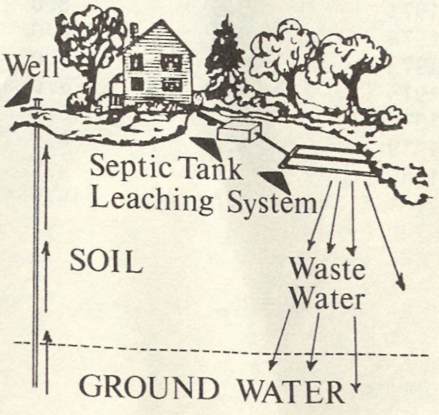
Automotive products: Engine and metal degreasers, brake and transmission fluids, oil and gasoline, radiator flushes, car waxes and cleaners, antifreeze.

Cleaners: Household cleaners, cleaning fluid, floor strippers and cleaners, rug and upholstery cleaners, oven cleaners and septic tank cleaners.

Deodorizers: Toilet flush.

Disinfectants: Bathroom disinfectants.

Laundry Products: Spot removers, laundry degreasers.



Paint Products: Paint, paint remover, thinner, turpentine and paint stripper.

Pesticides: House, Lawn, Fruit, Vegetable.

Photographic Developing Products.

Polish: Shoe polish, furniture polish, floor wax and metal polishes.

Preservatives: Floor, wood and waterproofing chemicals.

To help protect your well and your neighbor's, observe the following Do's and Don'ts:

DO

Read product labels before you buy.

Buy only what you need.

Recycle used motor oil.

Make sure unwanted chemicals are placed in a sealed container and taken to a secure landfill.

Have underground fuel tanks tested for leaks.

DON'T

Pour oil or chemicals on the ground.

Pour wastes into catch basins or dry wells.

Discard household chemicals in a septic tank.

Use more pesticide than you need. ■

Buyer beware

This article first appeared in a magazine published by the Michigan Department of Natural Resources. It should be of interest to anyone considering the purchase of commercial/industrial properties. Laura Zybell, an employee of DNR's Environmental Services Division, was the author.

In the usual transaction for purchase of property for commercial purposes, a buyer will identify the site characteristics he or she is looking for. The location may be determined by proximity to resources, markets or available work force. Certain physical features such as buildings, roads, the type of soil and lay of the land may be of concern. Certain operations may require specific services in terms of water, sewer, power supply, or electrical service as well as railroad or other transportation needs.

In addition to these attributes, it is important to keep in mind certain liabilities the buyer might prefer to avoid. Although it is often overlooked, a very important negative consideration is the presence of chemical wastes requiring costly treatment or disposal of polluted ground or surface waters or soils. Those unseen problems may cost unsuspecting new property owners tens of thousands or even a million dollars or more to correct.

Several recommendations can be made to prevent the buyer of commercial property from taking on such liability. The following four steps should be considered as routine for transactions involving the sale of any previously operated commercial site:

1. Investigate the history of the site. Ask what company previously owned the site and the type of business it was. This information may be available from neighboring land owners or business people. the registrar of deeds, or the assessor's records at the township or county clerk offices. Ask why the former business has left the property. Companies vacating due to bankruptcy should be carefully examined to determine if they have had sufficient resources to handle and dispose of toxic chemicals properly.

Contact the local health department and DEP to inquire about any history of pollution problems at the site. The following list should serve to alert buyers to types of operations which have historically used chemicals that if improperly disposed of or handled, may negatively impact the environmental resources, specifically including the groundwater:

a) Production of paints, pesticides, pharmaceuticals, explosives, industrial or other specialty chemicals.

b) Wholesalers or retailers of the above chemical products.

c) Dry cleaning establishments using perchloroethylene or other organic solvents.

d) Any company using solvents for paint thinning or degreasing purposes.

e) Metal plating operations.

f) Refiners, wholesalers or retailers of petroleum fuels. Even privately owned underground storage tanks may leak gasoline to groundwaters.

g) Bulk or barrel storage or transportation terminals used for paints, solvents, pesticides, herbicides, fertilizers, chemical and pharmaceutical products.

2. Inspection. At present, the buyer is his own investigator when it comes to inspection of the property. Inspection of the commercial property should be very thorough, looking inside of any structures including basement areas and looking inside any transportation equipment left on the site. The investigator will be looking for pits, ponds, lagoons, tanks, barrels and any other storage containers which might contain solid or liquid waste materials. Stains on the soil or other evidence of spills on the site should be noted.

3. The Buy/Sell agreement should be a carefully structured document which would dictate the responsibility of the seller in these cases. Real property, that is the land and buildings, generally goes with the agreement. It is often assumed that personal property such as machines, equipment and chemical materials would be removed by the seller prior to sale. However, it is wise to spell out in the buy/sell agreement that by a certain date these specific actions will be taken.

A further precaution would be to require an adequate sum of money to be held in escrow at the time of closing to enable the buyer to proceed with the disposal were the action not carried out.

4. Precautionary Measure. Under the guidance of appropriate legal counsel, a buyer may request that the seller include in the purchase agreement or land contract and deed a covenant which runs with the land stating that there are no outstanding administrative. civil or criminal actions for environmental reasons but that for a period of years the buyer does not release the seller from any liability of any kind

To page 19

Smoke

From page 15

Anthracite coal (hard coal)
Low sulfur, low ash, high carbon; low smoke when properly burned, best for home heaters.

Bituminous coal (soft coal)
High ash, high sulfur; large amounts of soot, dust, smoke; not desirable for use in home heaters.

Cannel coal
High volatile content, burn in fireplaces only; not to be burned in stoves or other closed fire boxes due to explosive nature.

****

For further information contact:

The Governor's Council
on Energy
2 1/2 Beacon Street
Concord, N.H. 03301

New Hampshire Air
Resources Agency
Health & Welfare Building
Hazen Drive
Concord, N.H. 03301

Air Compliance Unit
Department of Environmental
Protection
State Office Building
Hartford, CT 06106

Energy Division
Office of Policy and
Management
80 Washington Street
Hartford, CT 06106 ■

Films at AIAI

The American Indian Archeaological Institute, in conjunction with the United Technologies Corporation, is presenting the Small World Film Festival in January. On January 14 and 15 the films "Black Delta Region" and "High Steel" will be shown. "Snow" and "If You Can Walk" will be featured on January 21 and 22, and "Man of Aran" is scheduled for the 28th and 29th of the month. All films will begin at 2:30 p.m.

In addition, the public is invited to a slide lecture on Northeastern Woodland Indian Crafts by Karen Coody Cooper on January 21 at 1 p.m. The crafts, pottery, beadwork, and weaving will be explored with slides depicting how-to, evolution and modern Indian craftspeople. Ethnographic examples as well as replicas of these crafts are continuously on exhibit at AIAI.

Admission to AIAI is by membership or a donation of $2 for adults and $1 for children ages six to eighteen. Senior citizens are invited to the Small World Film Festival each Monday at 1:30 p.m. as AIAI's guests. The institute is accessible to the handicapped.

The AIAI is located on Route 199 in Washington, Connecticut. For further information on these or other programs, please call (203) 868-0518. ■

Grant award establishes Undersea Research Center

Senator Lowell P. Weicker, Jr., R-Conn., and U.S. Representative Sam Gedjensen, D-2nd, recently announced the award of a grant totaling $93,684 to the University of Connecticut for development of the National Undersea Research Center at Avery Point (NURCAP).

The new center is funded by the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce and represents regional participation of the New England states, Pennsylvania, New Jersey and New York. Through the national undersea research programs, NOAA fulfills a mandated responsibility for managing and protecting living marine resources and their habitats, and for monitoring and conducting research in marine pollution, seafloor processes and deep ocean technology.

The Avery Point facility will solicit research proposals from scientists at institutions in the Northeast. NURCAP will address critical marine science problems and needs unique to the Northeast and will coordinate scientific efforts utilizing undersea equipment and facilities for collection of research data. These investigations will involve use of undersea research systems such as saturation-diving habitats, remote-operated vehicles (ROV's) or submersibles.

The grant will cover program development for the fiscal year ending June 30, 1984. It includes costs for establishing an administrative structure which will provide a cooperative relationship among the institutions in the Northeast states that conduct undersea research. Additional funds are planned for 1984 operational research, employing a deep submersible and ROV system for offshore lobster population studies and ocean disposal site inspection.

Dr. Victor E. Scottron has been appointed Director of Undersea Research for the University. Dr. Scottron is the former director of the Institute of Water Resources and the current Director of the Connecticut Sea Grant Program.

NURCAP's Scientific Director is Dr. Lance L. Stewart. Dr. Stewart, currently Program Leader of the Sea Grant/Extension Marine Advisory

Service, is a marine biologist with extensive experience in diving and undersea research.

NOAA considers Avery Point an ideal site for the research center because it is centrally located and has immediate access to the Atlantic Ocean, as well as a suitable staff and facilities.

NURCAP joins a number of other marine research institutes at UConn's Avery Point Campus. Already there are the University's Marine Sciences Institute, Sea Grant and the Marine Advisory Service, the U.S. Coast Guard Research and Development Center, State Department of Environmental Protection Natural Resources Unit and Project Oceanology.

Other NOAA undersea research centers are in the Caribbean, North Carolina, Hawaii and California. The northeast location will provide an opportunity to draw on personnel with marine expertise and research capabilities available in the Atlantic seaboard states, and to respond to the important undersea research needs of the region. ■

Home Energy Seminar

On Saturday, January 28, the Connecticut Audubon Society will hold a seminar on "Energy Saving Approaches to New Construction." The seminar, which will be conducted by Joe Matto and Colin Healy of Sunspace, Inc. of Monroe, will examine the tradeoffs which result from adopting any one energy-saving technique to the exclusion of all others. Major emphasis will be placed on combining systems into hybrid designs in order to achieve cost effectiveness, high performance, and architectural flexibility.

The program will be held at the CAS Center on 2325 Burr Street in Fairfield. Cost is $7.50 single or $10 per couple for CAS members, $10 single or $15 per couple for non-members. For registration or information, call (203) 259-5606 Tuesday through Saturday 9 a.m. to 5 p.m. ■

Audubon Bird Booklet Read before you feed!

Americans spend an estimated $90 million a year on food for wild birds, but it's a safe guess that neither the people nor the birds are getting the best use out of all those backyard feeders. The National Audubon Society has published a new booklet to help remedy the situation.

The book includes recommendations on: landscaping that will attract birds; bird feeding preferences and bird behavior; and setting up feeders and feeding stations.

Called "Banquets for Birds," Suggestions for Supplementary Feeding, The 24-page Booklet is available at cost ($1.60 including postage) from Information Services, National Audubon Society, 950 Third Avenue, New York, N.Y. 10022. ■

Index Available

An index of articles that appeared in Volume 10 of the DEP Citizens' Bulletin (September 1982-July/August 1983) is available on request from:

Editor
DEP Citizens' Bulletin
State Office Bldg., Rm. 112
Hartford, CT 06106 ■

Nautical Charts Available

For those whose domain is the sea--commercial and sport fishermen, pleasure boaters, ship captains, and others--nautical charts are published by the National Oceanic and Atmospheric Administration (NOAA). The charts are designed to provide information necessary for safe boating, such as bottom depths at low water, hidden dangers, channels, landmarks, lighthouses, prohibited areas, wharves, and more. There are several chart classifications: for small craft, providing easy reference and plotting in close quarters; harbor charts for navigation and anchorage in harbors and smaller waterways; general charts for boats traveling well offshore but in positions fixable by lights, buoys, and other marks; sailing charts for offshore sailing between distant points, including plotting of port approaches from offshore; and intracoastal waterway charts, a special series showing interior water routes along the eastern seaboard and part of the Gulf Coast.

Nautical charts of Connecticut's shoreline and the upper and lower Connecticut River are available at most marinas and marine supply companies, along with chart catalogues which show what charts are available for entire regions.

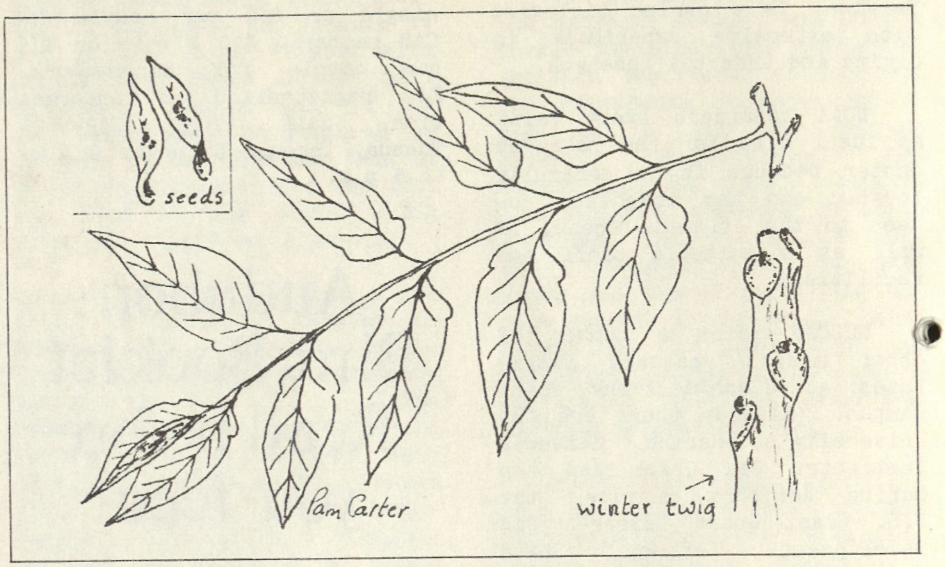
Write for information to Distribution Service (OA/C44), National Ocean Survey, 6501 Lafayette Street, Riverdale, Maryland 20737; phone (301) 436-6990. ■

Trailside Botanizing

By G. Winston Carter

Tree of Heaven (Ailanthus altissima)

This unusual tree can be easily identified, even during the winter months, because of its thick twigs, its false end buds and its large shield-like leaf scars. Some of its propeller-like seeds often persist on the upper branches. During other months in the year when it has its foliage, the large compound leaves help to identify it. They resemble sumac if they are observed casually, but on closer inspection there are some very distinct differences. Most sumac have toothed leaves and not as many leaflets. In Ailanthus the compound leaves are not toothed except at the base of each leaflet where there is usually one, or sometimes two, teeth. In addition, a small raised gland is present beneath each tooth.



A common place to find this tree is in vacant lots in the city, or even growing up through pavement, but it has also become naturalized and is found growing in the wild in fields and woodlands.

Ailanthus is an introduced species having come originally from China. At first, it was recommended for city planting as an ornamental, but it is now considered objectionable as a shade tree. This is because of its unusually rapid growth and its ability to invade areas where it is not wanted. Even under harsh conditions this tree may grow more than nine feet annually. It also produces foul smelling male (staminate) flowers.

In spite of all its disadvantages, it does have a role to play in blighted areas where other trees will not grow. It is a most adaptable tree, being able to tolerate badly polluted areas. Betty Smith observed this tree with great admiration because of its persistence even under the greatest of difficulties. Her book, "A Tree Grows in Brooklyn," is a testimony to her feeling about it. ■

DEP Citizens' Bulletin
State of Connecticut
Department of Environmental Protection
State Office Building
Hartford, Connecticut 06106

SECOND CLASS POSTAGE PAID
AT HARTFORD, CONNECTICUT